WHAT IS CLAIMED IS:

1. A method of allocating a shared resource among a plurality of competing applicants, comprising:

limiting a share of the resource allocated to one of the applicants on the basis of a current proportion of the resource allocated to the one of the applicants and a total of respective shares of the resource currently allocated to all of the applicants.

2. The method of claim 1, wherein:

the shared resource is a packet storage memory in a data communication switch; and

the competing applicants are input ports of the communication switch.

3. The method of claim 1, wherein the share of the resource allocated to the one of the applicants is limited to a proportion of the resource which is equal to a proportion of the resource that is not currently allocated to any of the applicants.

4. The method of claim 1, wherein the share of the resource allocated to the one of the applicants is limited to a proportion of the resource which is equal to the product of a constant K times a proportion of the resource that is not currently allocated to any of the applicants, $K \neq 1$.

5. A method of allocating a shared resource among a plurality of competing applicants, comprising:

foreclosing further allocation of the shared resource to one of the competing applicants when a proportion of the shared resource currently allocated to the one of the

competing applicants is at least as great as the product of a constant K times a proportion of the shared resource that is not currently allocated to any of the competing applicants.

6. The method of claim 5, wherein $K = 1$.

7. The method of claim 5, wherein K is selected from the group consisting of 2 and 0.5.

8. The method of claim 5, wherein:

the shared resource is a packet storage memory in a data communication switch; and

the competing applicants are input ports of the communication switch.

9. A method comprising:

determining a proportion of a shared memory space currently allocated to a first input port of a data communication switch;

determining a proportion of the shared memory space that is not currently allocated to any input port of the data communication switch; and

asserting flow control with respect to the first input port if the proportion of the shared memory space currently allocated to the first input port is not less than a quantity obtained by performing a calculation with respect to the proportion of the shared memory space that is not currently allocated to any input port of the data communication switch.

10. The method of claim 9, wherein the performing of the calculation includes multiplying the proportion of the shared memory space that is not currently allocated to any input port of the data communication switch by a constant K, $K \neq 1$.

11. The method of claim 9, further comprising:

allocating a portion of an overflow zone to the first input port in regard to at least one data packet received at the first input port at a time when flow control is asserted with respect to the first input port.

12. A method comprising:

determining a proportion of a shared memory space currently allocated to a first input port of a data communication switch;

determining a proportion of the shared memory space that is not currently allocated to any input port of the data communication switch; and

asserting flow control with respect to the first input port if the proportion of the shared memory space currently allocated to the first input port is not less than the product of a constant K times the proportion of the shared memory space that is not currently allocated to any input port of the data communication switch.

13. The method of claim 12, wherein K = 1.

14. The method of claim 12, further comprising:

allocating a portion of an overflow zone to the first input port in regard to at least one data packet received at the first input port at a time when flow control is asserted with respect to the first input port.

15. A data communication switch, comprising:

a plurality of input ports;

a packet storage memory coupled to the plurality of input ports; and

a control circuit coupled to the plurality of input ports and the packet storage memory, the control circuit operative to:

determine a proportion of a shared region of the packet storage memory that is currently allocated to a first one of the input ports;

determine a proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports; and

assert flow control with respect to the first one of the input ports if the proportion of the shared region of the packet storage memory currently allocated to the first one of the input ports is not less than a quantity obtained by performing a calculation with respect to the proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports.

16. The data communication switch of claim 15, wherein the performing of the calculation includes multiplying the proportion of the shared memory space that is not currently allocated to any input port of the data communication switch by a constant K, K $\neq 1$.

17. The data communication switch of claim 16, wherein K is selected from the group consisting of 2 and 0.5.

18. A data communication switch, comprising:

a plurality of input ports;

a packet storage memory coupled to the plurality of input ports; and

a control circuit coupled to the plurality of input ports and the packet storage memory, the control circuit operative to:

determine a proportion of a shared region of the packet storage memory that is currently allocated to a first one of the input ports;

determine a proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports; and

assert flow control with respect to the first one of the input ports if the proportion of the shared region of the packet storage memory currently allocated to the first one of the input ports is not less than the product of a constant K times the proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports.

19. The data communication switch of claim 18, wherein K = 1.

20. The data communication switch of claim 18, wherein the control circuit is further operative to:

allocate a portion of an overflow zone to the first input port in regard to at least one data packet received at the first input port at a time when flow control is asserted with respect to the first input port.

21. The data communication switch of claim 18, wherein the control circuit is further operative to:

determine a proportion of a group fraction of the packet storage memory that is not currently allocated to any input port of a group to which the first one of the input ports is assigned; and

assert flow control with respect to the first one of the input ports if the proportion of the shared region of the packet storage memory currently allocated to the first one of the input ports is not less than the product of a constant L times the proportion of the

group fraction of the packet storage memory that is not currently allocated to any input port of the group to which the first one of the input ports is assigned.

22. The data communication switch of claim 21, wherein K = L.

23. The data communication switch of claim 21, wherein the control circuit is further operative to:

assert flow control with respect to the first one of the input ports if the proportion of the shared region of the packet storage memory is not less than a specific limit assigned to the first one of the input ports.

24. A data communication switch, comprising:

a plurality of input ports;

a packet storage memory coupled to the plurality of input ports; and

control means coupled to the plurality of input ports and the packet storage memory, the control means for:

determining a proportion of a shared region of the packet storage memory that is currently allocated to a first one of the input ports;

determining a proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports; and

asserting flow control with respect to the first one of the input ports if the proportion of the shared region of the packet storage memory currently allocated to the first one of the input ports is not less than the product of a constant K times the proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports.

25. The data communication switch of claim 24, wherein K = 1.

26. The data communication switch of claim 24, wherein K is selected from the group consisting of 2 and 0.5.

27. A control circuit, comprising:

first means for determining a proportion of a shared region of a packet storage memory that is currently allocated to a first one of a plurality of input ports;

second means for determining a proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports; and

means, responsive to the first and second means, for asserting flow control with respect to the first one of the input ports if the proportion of the shared region of the packet storage memory currently allocated to the first one of the input ports is not less than the product of a constant K times the proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports.

28. The control circuit of claim 27, wherein K = 1.

29. The control circuit of claim 27, wherein K is selected from the group consisting of 2 and 0.5.

30. A control circuit, comprising:

a first circuit capable of determining a proportion of a shared region of a packet storage memory that is currently allocated to a first one of a plurality of input ports;

a second circuit capable of determining a proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports; and

a third circuit, responsive to the first and second circuits, and capable of asserting flow control with respect to the first one of the input ports if the proportion of the shared region of the packet storage memory currently allocated to the first one of the input ports is not less than the product of a constant K times the proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports.

31. The control circuit of claim 30, wherein K = 1.

32. The control circuit of claim 30, wherein K is selected from the group consisting of 2 and 0.5.

33. An apparatus, comprising:

a storage medium having stored thereon instructions that when executed by a machine result in the following:

determining a proportion of a shared region of a packet storage memory that is currently allocated to a first one of a plurality of input ports;

determining a proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports; and

asserting flow control with respect to the first one of the input ports if the proportion of the shared region of the packet storage memory currently allocated to the first one of the input ports is not less than the product of a constant K times the proportion of the shared region of the packet storage memory that is not currently allocated to any of the input ports.

34. The apparatus of claim 33, wherein K = 1.

35. The apparatus of claim 33, wherein K is selected from the group consisting of 2 and 0.5.

36. A data communication switch, comprising:

a plurality of input ports;

a packet storage memory coupled to the plurality of input ports;

a plurality of output ports coupled to the packet storage memory; and

a control circuit coupled to the input ports, to the packet storage memory, and to the output ports, the control circuit operative to:

partition the packet storage memory into (a) a guarantee zone which comprises a plurality of guaranteed memory resources each set aside for a respective one of the input ports, (b) a shared zone, and (c) an overflow zone;

determine whether a first one of the input ports has exceeded the guaranteed memory resource set aside for the first one of the input ports in the guarantee zone;

determine a proportion of the shared zone that is currently allocated to the first one of the input ports;

determine a proportion of a group fraction of the shared zone that is not currently allocated to any input port of a group to which the first one of the input ports is assigned;

assert flow control with respect to the first one of the input ports if a proportion of the shared zone currently allocated to the first one of the input ports is not less than the product of a constant L times the proportion of the group fraction of the

shared zone that is not currently allocated to any input port of the group to which the first one of the input ports is assigned;

determine a proportion of the shared zone that is not currently allocated to any of the input ports;

assert flow control with respect to the first one of the input ports if the proportion of the shared zone currently allocated to the first one of the input ports is not less than the product of a constant K times the proportion of the shared zone that is not currently allocated to any of the input ports;

set a specific maximum shared zone limit for the first one of the input ports;

assert flow control with respect to the first one of the input ports if the proportion of the shared zone currently allocated to the first one of the input ports is not less than the specific maximum shared zone limit for the first one of the input ports; and

allocate a portion of the overflow zone to the first one of the input ports in regard to at least one data packet received at the first one of the input ports at a time when flow control is asserted with respect to the first one of the input ports.

37. The data communication switch of claim 36, wherein the control circuit is further operative to:

deassert flow control with respect to the first one of the input ports if the proportion of the shared zone currently allocated to the first one of the input ports is less than each one of: (a) the product of a constant M times the proportion of the group fraction of the shared zone that is not currently allocated to any input port of the group to which the first one of the input ports is assigned (M being less than L), (b) the product of a constant N times the proportion of the shared zone that is not currently allocated to any of the input ports (N being less than K), and (c) a reduced specific maximum shared zone

limit for the first one of the input ports, the reduced specific maximum shared zone limit being less than the specific maximum shared zone limit.

38. The data communication switch of claim 37, wherein M = 0.9 x L, N = 0.9 x K, and the reduced specific maximum shared zone limit is nine-tenths of the specific maximum shared zone limit.

39. The data communication switch of claim 37, wherein the control circuit is further operative to deassert flow control with respect to the first one of the input ports if no portion of the shared zone is currently allocated to the first one of the input ports.

40. The data communication switch of claim 36, wherein K = L = 1.